

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently Amended) A computer program product, tangibly embodied on a machine-readable storage device in an information-carrier, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

displaying a user interface in a client program, the user interface having a plurality of controls, the plurality of controls including multiple types of controls, each control having a state;

for each control in the plurality of controls, storing the state of the control as a first state for the control;

receiving user input comprising a change to the state of a control in the plurality of controls;

updating the state of the control based on the user input;

storing the updated state of the control as a second state for the control;

receiving user input comprising a request to undo the change; and

restoring the state of the control to reflect the first state for the control.

2. (Currently Amended) The computer program product of claim 1, wherein the multiple types of controls include one or more of a text field control type, a radio button control type, a table control type, a tray control type, and a menu control type.

3. (Currently Amended) The computer program product of claim 1, wherein the state of the control includes a data state and a view state, and wherein the operations further comprise:

 determining whether the change affects the data state or the view state of the control; and

 restoring the state of the control only if the change affects the data state of the control.

4. (Currently Amended) The computer program product of claim 1, wherein the operations further comprise:

 receiving user input comprising a request to redo the change to the control; and
 restoring the state of the control to reflect the second state for the control.

5. (Currently Amended) The computer program product of claim 1, wherein the user input comprising the request to undo the change is received while focus is not on the control.

6. (Currently Amended) The computer program product of claim 1, wherein restoring the state of the control includes restoring the a state of another control that shares data with the control.

7. (Canceled).

8. (Currently Amended) The computer program product of claim 1, wherein restoring the state of the control occurs prior to transmitting the state of the control to a server.

9. (Currently Amended) A computer program product, tangibly embodied on a machine-readable storage device in an information carrier, the computer program product comprising instructions operable to cause data processing apparatus to perform operations comprising:

generating a plurality of at least one data structures structure that store stores application data[[.]] and associations between the application data and a plurality of one or more application controls, wherein the plurality of application controls that are rendered based on the stored application data;

detecting that the at least one data structure of the plurality of data structures has changed from a prior state to a new state;

recording the prior state of the at least one data structure;

receiving user input requesting that an undo operation be performed; and

performing the undo operation by restoring the at least one data structure to the prior state.

10. (Currently Amended) The computer program product of claim 9, wherein the at least one data structure is at least one data tree.

11. (Currently Amended) The computer program product of claim 9, wherein the at least one data structure is stored on a client device.

12. (Currently Amended) The computer program product of claim 9, wherein the plurality of application controls include multiple types of controls.

13. (Currently Amended) The computer program product of claim 9,
wherein the associations between the application data and the plurality of application
controls are defined by metadata for the application.

14. (Original) An apparatus comprising:

means for displaying a user interface in a client program, the user interface
having a plurality of controls, the plurality of controls including multiple types of controls,
each control having a state;

means for, for each control in the plurality of controls, storing the state of the
control as a first state for the control;

means for receiving user input comprising a change to the state of a control in
the plurality of controls;

means for updating the state of the control based on the user input;

means for storing the updated state of the control as a second state for the
control;

means for receiving user input comprising a request to undo the change; and

means for restoring the state of the control to reflect the first state for the control.